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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/019,485	04/17/2002	Svend-Erik Mikkelsen	H0610.0000	1371

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EXAMINER

TOOMER, CEPHIA D

ART UNIT	PAPER NUMBER
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1714

MAIL DATE	DELIVERY MODE
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05/31/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/019,485	Applicant(s) MIKKELSEN ET AL.	
	Examiner Cephia D. Toomer	Art Unit 1714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 February 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12-16 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office action is in response to the amendment filed February 1, 2007 in which claim 16 was added.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 12-16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The examiner does not find support in the specification nor does applicant point to the place in the specification wherein the limitation "the concentration of dimethyl ether is between 30 and 68% w/w" or "30 and 60% w/w", and "the concentration of water is between 14 and 40 % w/w" is recited.

Applicant provides examples to explain how the disputed limitations were reached. Applicant's examples are just that, examples. These examples are not set forth in the specification and do not provide support for the claimed limitations.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Basu (US 6,270,541) in view of Applicant's admitted prior art, Ford Vehicles, Mendler (US 6,125,801) and Ceynow (US 5,440,880).

Basu teaches a diesel fuel composition comprising 70-95 wt % dimethyl ether, up to 20 wt % methanol and from 0.1 to about 20 wt % water (see abstract). Basu teaches that the fuel is used in a compression ignition engine with direct injection fuel system and fitted with an exhaust gas recirculation system (see col. 4, lines 61-67; col. 5, lines 1-4). Basu teaches the limitations of the claims other than the differences that are discussed below.

In the first aspect, Basu differs from the claims in that he does not specifically teach that the dimethyl ether is present in an amount from 30-68 % w/w. However, Basu teaches that the ether is present in an amount of 70 % and a prima facie case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. *Titanium Metals Corp. of America v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985).

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Basu fails to teach that the air for combustion is preheated to a temperature of at least 60 °C. However, Basu teaches that the diesel engine of his invention (col. 4, line 61 through col. 5, lines 1-4) is fitted with an exhaust gas recirculation system (EGR) and Applicant discloses at page 9, lines 4-7 that exhaust gas temperatures range from 200 °C to more than 500 °C and Ford defines EGR a system in which a portion of the exhaust gases are recirculated into the combustion chamber for additional burning. Mixing exhaust gases with a new air/fuel mixture helps reduce harmful nitrogen oxide emissions. Mendler teaches that the EGR feed line may be attached to intake air feed line engine either upstream or downstream of the intercooler. Ceynow teaches that air-to-air intercoolers may be combined with EGR to reduce intake manifold temperatures. It would have been obvious to one of ordinary skill in the art to preheat the air of combustion because the combined teachings suggest that the engine used by Basu contains all of the components necessary to preheat the air for combustion to at least 60 °C.

5. Applicant's arguments have been fully considered but they are not persuasive.

Applicant argues that the specification reasonably conveys to one skilled in the art that Applicant had possession at the time of filing the subject matter of claims 12 and 16.

The disclosed amounts of 36, 68, 29, and 55 % w/w of DME is not the same as 30-68 % w/w DME or 30-60% w/w of DME. Applicant cannot arbitrarily broaden the range to overcome the prior art of record. Furthermore, one should not have to perform

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complicated calculations in order to be able to practice the present invention. To have to perform these calculations is equivalent to undue experimentation.

Applicant argues that the examiner has failed to establish a prima facie case of obviousness.

Basu teaches injecting into the chamber of a combustion engine a fuel comprising 70-95 wt% DME, up to 20 wt % methanol and from 0.1 to about 20 wt % water. While Basu fails to teach 68 wt % DME is used in his invention, a prima facie case of obviousness exist because the claimed 68 wt% of DME is close enough to that of Basu's 70 wt% DME that one skilled in the art would have expected the fuels to have the same properties. With respect to the percentages of methanol and water, the ranges taught by Basu overlap those of the present invention.

Applicant argues that Basu teaches away from using less than 70 wt% DME.

The language used by Basu is "less than about 70 weight percent". This language clearly reads on 68 wt% DME as the term about broadens the amount of 70%.

Applicant argues that one skilled in the art would not have been motivated to lower the amount of DME or use the claimed amount of methanol and water because less DME would not improve the performance of a diesel engine.

The examiner respectfully disagrees. As stated above, all of the parameters set forth in the present claims either overlap or are close enough to those parameters of Basu that the skilled artisan would expect that the fuel composition would have the same properties.

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Applicant argues that the secondary and tertiary references would not have motivated the skill artisan to preheat the air of combustion to a temperature of at least 60 °C.

The examiner respectfully disagrees. Basu teaches that the diesel engine of his invention (col. 4, line 61 through col. 5, lines 1-4) is fitted with an exhaust gas recirculation system (EGR) and Applicant discloses at page 9, lines 4-7 that exhaust gas temperatures range from 200 °C to more than 500 °C and Ford defines EGR a system in which a portion of the exhaust gases are recirculated into the combustion chamber for additional burning. Mixing exhaust gases with a new air/fuel mixture helps reduce harmful nitrogen oxide emissions. Mendler teaches that the EGR feed line may be attached to intake air feed line engine either upstream or downstream of the intercooler. Ceynow teaches that air-to-air intercoolers may be combined with EGR to reduce intake manifold temperatures. Therefore, it would have been obvious to one of ordinary skill in the art to preheat the air of combustion because the combined teachings suggest that the engine used by Basu contains all of the components necessary to preheat the air for combustion to at least 60 °C.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Applicant argues that the data presented in Table 9 is sufficient to show unexpected results.

Applicant is claiming 30-68 wt% DME. It is the examiner's position that a showing of 68 wt% DME compared to Basu's 70 wt % DME would be a more fair comparison than one using 100 wt% DME.

1. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cephia D. Toomer whose telephone number is 571-272-1126. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone

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number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Cephia D. Toomer
Primary Examiner
Art Unit 1714

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